

## APPENDIX 6 – FORKLIFTS

### INTRODUCTION

Below is additional information pertaining to the Forklift Category for the South Coast Air Quality Management District's (AQMD's) FY 2003 Carl Moyer Program (CMP). All information in RFP #P2004-04 and this Appendix apply. For additional detail regarding this program category, refer to the California Air Resources Board's (CARB's) 2003 Moyer Program Guidelines<sup>1</sup>. In the case of any conflict between CARB guidelines and AQMD criteria, the more stringent criteria will prevail. Also, it is the Applicant's responsibility to check with AQMD's Moyer Program web page for program clarifications, changes and updates. This page may be accessed by clicking the "Clean Air Technologies" link on AQMD's home page at [www.aqmd.gov](http://www.aqmd.gov).

Forklifts are mobile vehicles powered by electric motors or internal combustion engines and used to carry, push, pull, lift, stack, or tier materials controlled by a rider or pedestrian operator, indoors or outdoors [ASME/OSHA]. Forklifts are used in a variety of applications, including, but not limited to, manufacturing, construction, retail, meat and poultry processing, lumber and building supplies, trades, agriculture, and a variety of warehouse operations.

The Industrial Truck Association (ITA) has defined seven classes of forklifts. These classes are defined by the type of engine, work environment (indoors, outdoors, narrow aisle, smooth or rough surfaces), operator positions (sit down or standing), and equipment characteristics (type of tire, maximum grade). Several classes are further divided by operating characteristics. The types of forklifts covered in this Appendix and their eligibility for Moyer funding are described in Table 6.1. Other types of heavy duty off-road equipment are covered in Appendix 2. Forklifts used at airports as Ground Support Equipment are discussed in Appendix 7.

### PROGRAM GUIDELINES

#### Changes for 2003

There are several potentially significant changes in the forklift guidelines for 2003.

- The earlier Demonstration Program for electric forklifts with 3,000-6,000 lbs. lift capacity is now a permanent part of the Moyer program. The cost-effectiveness ceiling for these forklifts is \$3,100.
- The adjusted cost-effectiveness ceiling for forklifts over 6,000 lbs. is \$13,600.

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<sup>1</sup> Be sure to visit <http://www.arb.ca.gov/msprog/moyer/moyer.htm> for the latest approved CARB Moyer Program Guidelines.

- For the first time funding is available for the incremental cost of retrofitting existing large spark ignition (LSI) forklifts under 8,000 lbs. or new LSI forklifts over 8,000 lbs. with a catalytic muffler-type control device.
- CARB has removed the requirement that the internal combustion engine (ICE) forklift being replaced must have an engine rating of at least 50hp. The new criterion is that the ICE forklift being replaced must have a lift capacity commensurate with the new electric forklift.
- The capital recovery factor has been reduced from 5 percent to 3 percent.

### **General Project Eligibility Criteria**

Table 6.1 describes the different forklift classes and their eligibility for Moyer funding. Electric forklifts come in a variety of lift capacities from 3,000 lbs. to 20,000 lbs. lift capacity although most electric forklifts are in the 3-6,000 lb. lift capacity range. Electric forklifts are most typically used in indoor materials handling applications that do not require large lift capacities (i.e., warehouse/retail operations). There are some applications where electric forklifts are used extensively, primarily for worker safety. These applications include confined spaces, cold storage, and food retail (primarily grocery stores).

Although electric forklifts are primarily designed for indoor operations, a number of manufacturers are also including equipment features, which enable electric models to be used in a wider variety of environments. These features include pneumatic tires (air filled), which allow the forklift to be used on unimproved surfaces, water proofing trucks or sealing the electronic compartment to make them more water resistant for outdoor conditions, and alternating current (A.C.) motors that provide greater lift and travel speeds. Class 1 forklifts (electric) compete directly with ICE forklifts for many of the same work applications.

#### ICE forklifts consist of two types

- Spark ignition are powered by gasoline, propane or compressed natural gas (CNG). Engines over 25 hp are called Large Spark Ignition (LSI). The lift capacity for these forklifts generally ranges from 3,000 lbs. to 16,000 lbs. and they are generally used indoors.
- Compression ignition forklifts (CI) are powered exclusively by diesel and typically have lift capacities over 6,000 lbs, all the way up to 40,000 lbs. They are generally used in outdoor, rough terrain applications.

**Table 6.1 – Forklift Classes and Moyer Program Eligibility**

Class	Lift Code	Engine Type	Type/Use	Moyer Eligible	Tire Type	
1	1	Electric	Counterbalanced rider, stand up	No	Cushion or pneumatic (air filled)	
1	4		Three-wheel, sit down	No		
1	5		Counterbalanced rider, sit down	Yes, if replaces of ICE forklift and meets minimum lift requirement (3,000 lbs.)		
1	6		Counterbalanced rider, sit down	Yes, if replaces of ICE forklift and meets minimum lift requirement (3,000 lbs.)		
2			Narrow aisle truck		No	Solid
3			Hand or hand/rider truck		No	
4		ICE	Rider, sit down, generally suitable for indoor use on hard surfaces—primarily LSI	Retrofit only	Cushion	
5			Rider, sit down, typically used outdoors, on rough surfaces or steep inclines—primarily LSI	Retrofit only	Pneumatic	
6		ICE; Electric	Ride on unit with the ability to tow at least 1,000 pounds; designed to tow cargo rather than lift it (e.g. an airport tug)	See Appendix 7 GSE		
7		ICE (primarily diesel)	Rough terrain forklift truck for outdoor use; almost exclusively powered by diesel engines—compression ignition	Yes, if replaces ICE forklift with electric and meets minimum lift requirement (3,000 lbs.); no for CI retrofit because of upcoming retrofit control measure		

Two general types of projects are eligible for Moyer Program funding:

- Replacement of ICE forklifts with electric forklifts at existing facilities (with the exception of certain industries where electric forklifts already are prevalent) or purchase of electric forklifts for new or expanded facilities (if the project meets specific criteria)
- Retrofit of existing ICE forklifts with catalytic control devices

The following general criteria apply to Moyer projects (Table 6.2). Criteria for specific lift capacity or project type are discussed below.

**Table 6.2 – Moyer Program General Forklift Project Criteria.**

Criterion	Control Option	
	Electric Forklift Purchase	ICE Retrofit
NOx reductions obtained through this program must not be required by any existing regulations or binding agreements.	<b>X</b>	<b>X</b>
All forklifts must be rated for a minimum lift capacity of 3,000 lbs.		
All eligible projects will be required to have an hour-meter on each forklift, and track annual hours of operation.	<b>X</b>	<b>X</b>
Any existing regulations or binding agreements must not require NOx reductions obtained through this program.	<b>X</b>	<b>X</b>
Proposed project vehicles may not receive co-funding from any other vehicle funding grant program (i.e., past Moyer, MSRC, AQIP, etc.).	<b>X</b>	<b>X</b>
The following industries are not eligible for funding under this program: food retail stores, cold storage, and confined space operations (such as freezers).	<b>X</b>	<b>X</b>
Cost-effectiveness is \$13,600 per ton of NOx reduced for (1) electric replacement of forklifts with 6,000 pound or more lift capacity, or (2) ICE retrofit of new or existing forklifts. Cost-effectiveness for a forklift with 3,000 – 6,000 pound lift capacity is \$3,100 per ton of NOx reduced.	<b>X</b>	<b>X</b>
All projects must meet general Moyer Program requirements, which include using a minimum allowable project life of five years for calculating project benefits, and a minimum of 75 percent equipment operation in the South Coast Air Basin.	<b>X</b>	<b>X</b>
As a condition of funding, the applicant will agree to participate in the monitoring program as described in this chapter.	<b>X</b>	<b>X</b>
For reporting purposes, information on forklifts must include, <i>as applicable</i> , hours of operation (i.e., hours of use, kilowatt-hour use, and hours in idle); the relationship between horsepower and lift capacity; and the cost of charging equipment (including installation). All proprietary and confidential information is protected.	<b>X</b>	<b>X</b>

## Evaluation Methodology

AQMD staff will evaluate all submitted proposals and make recommendations to the Governing Board for final selection of project(s) to be funded. Proposals will be evaluated based on the cost-effectiveness of NO<sub>x</sub> reduced on an equipment-by-equipment basis, as well as a project's "disproportionate impact" evaluation (discussed below). Be aware of the possibility that due to program priorities and/or funding limitations, project applicants may be offered only partial funding, and not all proposals that meet minimum cost-effectiveness criteria may be funded.

In compliance with AB 1390, Firebaugh, the FY 2003 Moyer Program requires that at least 50 percent of the funds be spent in areas that are disproportionately impacted by air pollution. CARB has issued broad goals and left the details of how to implement this requirement to each air agency. In the South Coast Air Quality Management District, the disproportionately impacted areas are defined by a weighted formula that includes poverty level, particulate matter (PM) exposure and toxic exposure. The process is described below:

1. All projects must qualify for the Moyer Program by meeting the cost-effectiveness limits established in the RFP.
2. All projects will be evaluated according to the following criteria to qualify for Disproportionate Impact funding:
  - a. Poverty Level: All projects in areas where at least 10 percent of the population falls below the Federal poverty level based on the year 2000 census data, will be eligible to be included in this category, and
  - b. PM Exposure: All projects in areas with the highest 15 percent of PM concentration will be eligible to be ranked in this category. The highest 15 percent of PM concentration is 46 micrograms per cubic meter and above, on an annual average, or
  - c. Toxic Exposure: All projects listed in the Multiple Air Toxics Exposure Study in the South Coast Air Basin (Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES II), SCAQMD, March 2000) report as having a cancer risk of 1,000 in a million and above will be eligible to be ranked in this category.

Data for the poverty level and PM and toxic exposures were obtained from the U.S. Census, the 1998 AQMD monitoring data and Mates II study respectively.

3. Fifty percent of the \$12.3 million available for this RFP will be allocated among proposals located in disproportionately impacted areas. If the funding for disproportionately impacted areas is not exhausted with the outlined methodology, then staff will return to the Governing Board for direction. If funding requests exceed 50 percent of the total available funding, then all qualified projects will be ranked based on their disproportionate impact. Each project will be assigned a score that is comprised of 40 percent for poverty level, and 30 percent each for PM and toxic exposures. Proposals with the highest scores will receive funding until 50 percent of the total funding is allocated.

All the proposals not awarded under the fifty percent disproportionate impact funding analysis will then be ranked according to cost-effectiveness, with the most cost-effective project funded first and then in descending order for each funding category until the remainder of the Moyer Funds are exhausted. Some projects that exceed the cost-effectiveness ceiling may receive partial funding, depending on their rankings.

## **Eligible Costs**

### New/Replacement Electric Forklift Projects

Eligible project costs (i.e., costs for which Moyer funding is requested) are limited to the incremental cost of purchasing an electric forklift plus one battery pack, as compared to the cost purchasing a new ICE forklift. The cost of the new electric forklift should be compared to the cost of a comparable lift capacity ICE forklift. Applicants should obtain sales quotes for each type of forklift. Additional battery packs may be eligible for funding if they are justified by extended hours of operation or multi-shift operations. The applicant must certify that they are purchasing one battery charger per forklift, but the cost of the charger is considered infrastructure and are not eligible to be funded under the Moyer Program.

### Large Spark Ignition (LSI) Forklift Retrofits

Eligible project costs include the labor and materials cost of retrofitting an existing large spark ignition (LSI) forklift with a lift capacity under 8,000 lbs. and new forklifts with a lift capacity over 8,000 lbs. with a catalytic muffler-type retrofit control device. However, existing forklifts must demonstrate that they have at least 5 years useful life remaining (CARB is assuming a total useful life of 11 years.)

Operation and maintenance costs are not eligible for Moyer Program funding. More details on allowable and excluded types of projects are included in the eligible projects section.

Table 6.3 summarizes the allowable costs under the Moyer Program.

**Table 6.3 – Allowable Program Costs**

<b>Allowable Costs under Moyer Program</b>	<b>Electric Forklifts</b>	<b>Large Spark Ignition Forklifts (existing under 8,000 lbs. or less or new over 8,000 lbs.)</b>
Incremental Cost of new forklift	Yes	No
Cost of one battery pack	Yes	n/a
Cost of second battery pack	Yes with justification	n/a
Chargers	Required but not funded	n/a
Hour-meter	Yes	Yes
Retrofit with catalytic control device.	n/a	Yes—if 5 years useful life remaining

### **Reporting and Monitoring**

AQMD has the authority to conduct periodic checks or solicit operating records from any applicant that receives Moyer Program funds for new electric forklift projects or ICE retrofit projects. This is to ensure that the equipment is operated as stated in the program application. Forklift owners participating in the Moyer Program are required to keep appropriate records throughout the life of the funded project. Records must contain, at a minimum, the following information:

- Total hours operated
- Maintenance and repair information

For electric forklift projects, records must additionally contain information regarding:

- Amount of electricity used
- Type and characteristic of charging equipment used
- Disposition of the ICE forklift that was replaced.

All records must be retained and updated throughout the project life and made available at the request of AQMD.

## PROJECT TYPES

The goal of the Moyer Forklift Program is to facilitate the reduction of emissions from ICE forklifts through two strategies:

- Replacement of user-owned ICE forklifts with electric forklifts in industries in which they are not already prevalent.
- Retrofit of existing ICE forklifts under 8,000 lbs. or less lift capacity and new forklifts over 8,000 lbs lift capacity with a catalytic control device.

Since the replacement of old electric forklifts with new electric forklifts does not result in additional emissions reductions, electric to electric replacements are not permitted under the Moyer Program.

### **Replacement of ICE Forklifts with Electric Forklifts or Addition of Electric Forklifts to New/Expanded Facilities**

Electric forklifts have no exhaust emissions, and extremely low upstream (power plant) emissions. Thus electric forklifts can provide significant air quality and other benefits. One benefit is that electric forklifts have lower life cycle costs when compared with ICE models. This is due to lower maintenance costs, lower fueling costs, and longer useful life for an electric forklift. Although the initial capital cost is higher for an electric forklift as compared with the ICE forklift, the incremental cost can be recovered during the useful life of the electric forklift. Because of the financial benefits to the end user, electric forklifts are already prevalent in some markets.

#### Industry Application

The most viable control strategies include funding electric forklifts that replace ICE forklifts in applications where electric forklifts are not commonly used. These control strategies would include construction, millwork, cargo handling, lumber, plywood, foundries, and metal work. Conversely, there are several applications where electric forklifts are used extensively, as compared to ICE forklifts. These industrial applications include confined spaces (such as freezers), cold storage, and food retail (primarily grocery stores). Hence, forklift purchases or replacements in industries whose primary business includes confined spaces, cold storage, and food stores are not eligible for Program funding.

#### Forklift Rental

There is no practical way to ensure that leased or rented electric forklifts are replacing an ICE forklift, and not an "electric-to-electric" replacement. Therefore, rented and leased equipment are not eligible for Program funding with the exception of leased-to-own equipment for forklifts with 3-6,000 lb. lift capacity.



### Multiple Shift Operations

According to the Gas Research Institute report, on average, an electric (class 1 or 2) forklift is recharged after 11 clock (not meter) hours. Thus, electric forklifts operating in multiple shifts typically use multiple battery packs and battery change out equipment. The Moyer Program will fund the purchase of one battery pack per forklift purchased. Applications indicating a request to fund multiple battery packs that may be needed for multiple shift operations will be considered on a case-by-case basis. Documentation indicating the extensive use will be required with the application.

### New and Expanding Facilities

It is difficult to determine a company's commitment to electric forklifts without extensive details about the makeup of their existing fleet. To be funded under the Moyer Program, a company with multiple facilities that is preparing to open a new facility must demonstrate a commitment to significantly increase the overall percent of electric forklifts over ICE forklifts in the company's fleet.

Similarly, a company preparing to expand an operation must demonstrate that the expansion includes a physical change, such as a 25 percent increase in square footage. Facility expansions that increase square footage by less than 25 percent may be considered on a case-by-case basis. In general, the applicant must demonstrate that the new forklifts will increase the percentage of electric forklifts in the total fleet.

### **Large Spark Ignition ICE Retrofit**

Since electric forklifts will not replace all LSI ICE forklifts, the Moyer Program will now allow the incremental cost of a catalytic muffler-type retrofit control device to be eligible for funding. The only eligible retrofit devices are those that have either been verified by the CARB or technically evaluated by CARB and deemed to achieve the prescribed emissions reductions.

This ICE retrofit control option is currently not permitted for Compression Ignition (CI) (diesel) forklift engines.

### **ADDITIONAL PROJECT-SPECIFIC CRITERIA**

General project criteria were discussed above. There are additional project-specific criteria for each of the types of projects—replacement of ICE forklifts with electric forklifts and retrofits of ICE forklifts, which are detailed below.

### **Replacement of ICE Forklift with Electric Forklift**

Table 6.4 summarizes the specific criteria for the ICE to Electric Forklift replacement category. Several items are discussed in greater detail below.

<b>Table 6.4 – Specific Electric Forklift Project Criteria</b>
<p>Class 1, lift codes 5 or 6 (four-wheel counter-balanced sit-down) electric forklifts plus one battery pack for each forklift purchased are eligible.</p>
<p>Class 1, lift codes 1 or 4 (Stand up or three-wheel sit-down rider), Class 2 (narrow aisle), and Class 3 (hand/rider trucks) electric forklifts are <u>not</u> eligible.</p>
<p>For existing, new, and expanding facilities, all forklifts must be purchased new or leased-to-own. Organizations or businesses that rent out or lease forklifts are <u>not</u> eligible for funding. Rental or leased equipment costs are also <u>not</u> eligible for funding.</p>
<p>All expanding facilities must provide documentation that indicates a significant physical change in the facility, such as a 25 percent or greater increase in square footage. Expansions of less than 25 percent may be considered on a case-by-case basis.</p>
<p>All eligible projects must also include the installation of battery chargers that correspond to the number of forklifts purchased. Battery chargers are considered infrastructure and cannot be included as project costs. (Note that applicants may demonstrate that a one-to-one purchase of battery packs to forklifts is not required, for example, multiple shift operations or fast charging equipment).</p>
<p>For existing and expanding facilities, the ICE forklift that is being replaced (electric forklift purchase option) must have a lift capacity commensurate with that of the new electric forklift.</p>
<p>Forklifts used in commercial (passenger) and military airport operations were not included in the forklift emissions inventory. They may be eligible for funding provided they meet both forklift and GSE project criteria.</p>
<p>Before being approved for funding, applicants would have to provide AQMD staff with the following information, at a minimum: 1) whether fuel switching is occurring; 2) whether an electric forklift is replacing an ICE forklift; 3) disposition of ICE forklifts that are replaced; and 4) hours of operation. Funding will not be approved if staff determines that the electric forklifts are replacing older electric forklifts, and not ICE forklifts.</p>

### Hours of Usage

Annual hours of usage varies significantly between industries. For electric forklifts, the range varies from 500 hours to 3,500 hours a year, with an average of about 2,250 hours/year. The average annual hours of usage for an ICE forklift are 1,800-1,900 hours/year. When actual hours of operation are not known, CARB provided a default of 1,900 hours per year.

Ninety-nine percent of the forklifts in CARB's OFFROAD inventory are 11 years old or less. To be eligible for Moyer Program funding, an owner will need to certify that the used forklift has at least a five-year (9,500 hour) service life remaining. All projects will be required to have an hour-meter on each forklift, and track annual hours of operation for the project life (at least five years). The hour-meter cost is eligible for Moyer Program funding and the cost should be included in the grant request.

### Battery Charger

All projects are required to purchase battery chargers to ensure that Program funding is utilized for the replacement of an ICE forklift with an electric forklift, and not an electric-to-electric replacement. The number of chargers purchased must correspond to the number of forklifts purchased. There may be some cases, however, where a charger for every forklift is not necessary (for example, operations that incorporate daily multiple shifts, or facilities that have fast-charging equipment). Applications where the number of chargers differs from the number of forklifts will be evaluated on a case-by-case basis.

Battery chargers themselves are not eligible for Moyer Program funding because the CARB Guidelines prohibit funding for infrastructure, and the chargers constitute infrastructure.

### **ICE Retrofit**

Table 6.5 summarizes the specific criteria for ICE Retrofit projects.

<b>Table 6.5 – Specific ICE Retrofit Project Criteria</b>
The ICE Retrofit control option is limited to forklifts with LSI engines.
The used forklift must have at least a five-year (9,500 hour) service life remaining.
CI engines (diesel) are not eligible for the Forklift Program Category.

To be eligible for Moyer Program funding, an applicant will need to certify that the used forklift has at least a five-year (9,500 hour) service life remaining. All projects will be required to have an hour-meter on each forklift, and track annual hours of operation for the project life (five years). The average annual hours of usage for an ICE forklift are 1,800-1,900 hours/year. If actual hours of operation are not known, use the CARB default of 1,900 hours per year (See Table 6.7).

## **EMISSION REDUCTION AND COST-EFFECTIVENESS**

### **Emission Reduction Calculation Discussion**

Project cost-effectiveness is determined based on NOx emission reductions. New certification procedures combine NOx and NMHC emission factors into one quantity. To calculate the NOx fraction (i.e., NOx-only), the combined NOx and NMHC emission standard in Table 6.6 should be multiplied by 0.95 for diesel engines and 0.80 for alternative fuel engines.

Annual NOx emission reductions are determined by multiplying the difference in the NOx emission levels by the rated horsepower of the engine, the load factor, and the hours the engine is expected to operate per year. The difference in the NOx emission levels is a comparison between the baseline (existing) engine and the reduced (electric or retrofit) engine.

#### Horsepower

This is the rated engine power of the new ICE forklift that the applicant would have purchased if they were not purchasing an electric forklift. Horsepower is somewhat, but not directly, related to lift capacity and applicants will need to know both to do the calculations. Applicants should calculate their emission reduction benefits using the baseline NOx emission rates listed in Table 6.6 below. Applicants choosing the electric forklift substitution control option will select the baseline rate corresponding to the model year of the new ICE forklift that would have been purchased had an electric substitution not occurred. Applicants choosing the ICE forklift retrofit control option will select the baseline rate corresponding to the model year of their existing ICE forklift.

#### Load Factor

Load factor is an indication of the amount of work done, on average, by an engine in a particular application, given as a fraction of the rated horsepower of that engine. If the actual load factor is known for an engine it should be used in calculating emission reductions. If the actual load factor is not known, the default

value of 0.30 will be used; this is the load factor used in the CARB inventory for all non-construction forklifts (all fuels).

### Hours of Operation

If actual hours of equipment operation are not available, the default value of 1,900 annual hours should be used to calculate emission reductions.

Default values are summarized in Table 6.7.

### **Cost-Effectiveness Calculation Discussion**

The incremental cost of an electric forklift project to be funded through the Moyer Program is the difference between the cost of purchasing a new electric forklift and buying a new conventional forklift. Only the amount of money provided by the Moyer Program should be used in the cost-effectiveness calculations. The one-time incentive grant amount is to be amortized over the expected project life (at least five years) with a discount rate of three percent. The amortization formula (given below) yields a capital recovery factor, which when multiplied by the initial capital cost, gives the annual cost of a project over its expected lifetime.

$$\text{Capital Recovery Factor (CRF)} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where,  $i$  = discount rate (3 percent)  
 $n$  = project life (at least five years)

The capital recovery factors are provided in Table 6.8.

Cost-effectiveness is then determined by dividing the annualized cost by the annual NOx emission reductions apportioned over the project life. The cost-effectiveness ceiling is determined by forklift weight. Table 6.9 below summarizes the cost-effectiveness ceiling amounts for forklifts.

For the purposes of explaining the emission reduction and the cost-effectiveness calculations from a particular forklift project, three examples are presented below. The first example describes the calculations based on replacing an existing diesel forklift with an electric counterbalanced sit-down rider electric (class 1) forklift. The second example shows calculations for the replacement of a propane forklift. The third example shows calculations for the retrofit of a propane forklift.

**Table 6.6 – Baseline Emission Rates for Forklift Engines by Model Year<sup>2</sup>**

Rated Power (horsepower)	Type of Engine	Model Year	Emission Standards/Rates (g/bhp-hr)	
			NOx	NMHC +NOx
25 ≤ hp < 50	Compression ignition (diesel)	2000-2003	--	7.1
		2004 +	--	5.6
50 ≤ hp < 100	Compression ignition (diesel)	Pre-2000	8.75 <sup>3</sup>	--
		2000-2003	6.9	--
		2004 +	--	5.6
		2008 +	--	3.5
100 ≤ hp < 175	Compression ignition (diesel)	Pre-2000	8.17 <sup>4</sup>	--
		2000-2002	6.9	--
		2003 +	--	4.9
		2007 +	--	3.0
25 < hp ≤ 50	Large Spark-ignited (propane) Uncontrolled	Pre-2002	13.0 <sup>5</sup>	--
		2002 +	--	9.0 <sup>6</sup>
> 50 hp	Large Spark-ignited (propane) Uncontrolled	Pre-2001	10.5 <sup>7</sup>	--
		2001-2006	--	3.0 <sup>8</sup>
		2007 +	--	2.0 <sup>9</sup>
25 < hp ≤ 50	Large Spark-ignited (gasoline) Uncontrolled	Pre-2002	8.0 <sup>9</sup>	--
		2002 +	--	9.0 <sup>10</sup>
50 < hp < 120	Large Spark-ignited (gasoline) Uncontrolled	Pre-2001	11.8 <sup>11</sup>	--
		2001-2006	--	3.0 <sup>9</sup>
		2007 +	--	2.0 <sup>9</sup>
> 120 hp	Large Spark-ignited (gasoline) Uncontrolled	Pre-2001	12.9 <sup>12</sup>	--
		2001-2006	--	3.0 <sup>9</sup>
		2007 +	--	2.0 <sup>9</sup>

Reference: California Off-Road Large Spark-Ignited Engine Emissions Inventory (October 1998)

<sup>2</sup> Emission standards are provided where uncontrolled emission rates are not available.

<sup>3</sup> Emission rate for uncontrolled off-road heavy-duty diesel engines of 50 to 120 horsepower.

<sup>4</sup> Emission rate for uncontrolled off-road heavy-duty diesel engines of 120 or more horsepower.

<sup>5</sup> Emission rate for uncontrolled off-road heavy-duty propane engines of 25 to 50 horsepower.

<sup>6</sup> This emission standard is for propane or gasoline LSI engines with a displacement of 1.0 liter or less.

<sup>7</sup> Emission rate for uncontrolled off-road heavy-duty propane engines of 50 or more horsepower.

<sup>8</sup> This emission standard is for propane or gasoline LSI engines with a displacement of more than 1.0 liter.

<sup>9</sup> Emission rate for uncontrolled off-road heavy-duty gasoline engines of 25 to 50 horsepower.

<sup>10</sup> This emission standard is for propane or gasoline LSI engines with a displacement of 1.0 liter or less.

<sup>11</sup> Emission rate for uncontrolled off-road heavy-duty gasoline engines of 50 to 120 horsepower.

<sup>12</sup> Emission rate for uncontrolled off-road heavy-duty gasoline engines of 120 or more horsepower.

**Table 6.7 – Forklift Project Default Factors**

	<b>Default</b>	<b>Alternative</b>
<b>Hours of Operation</b>	1,900	Actual with documentation
<b>Project Life</b>	5	Actual with documentation
<b>Load Factor</b>	0.3	Actual from manufacturer data

**Table 6.8 – Capital Recovery Factors (CRF) for Various Project Lives  
At 3 percent Discount Rate**

<b>Project Life</b>	<b>CRF</b>
5	0.218
6	0.185
7	0.161
8	0.142
9	0.128
10	0.117
11	0.108
12	0.100
13	0.094
14	0.089
15	0.084
16	0.080
17	0.076
18	0.073
19	0.070
20	0.067

**Table 6.9 – Cost-Effectiveness Ceiling by Forklift Lift Capacity**

<b>Forklift Type</b>	<b>Cost-Effectiveness Cap</b>
Electric forklift 3-6,000 lbs. lift capacity	\$ 3,100
Electric forklift > 6,000 lbs lift capacity	\$13,600
ICE Retrofits (all lift capacities)	\$13,600

## Project Life

A key parameter in the determination of a project's emission reduction benefit is its project life. The acceptable maximum life for calculating the project benefits of forklift projects is summarized below in Table 6.10.

**Table 6.10 – Maximum Project Life for Forklift Projects**

<b>Project Type</b>	<b>Default Without Documentation</b>	<b>Default with Documentation</b>
Electric Forklift (replacement of Non-electric or Expansion)	5 years	11 years
Retrofit of Existing LSI Forklift	5 years	11 years

### Example 1 – Replacement of a Diesel Forklift

A forklift owner applies for a Moyer Program grant for the purchase of a new counter-balanced sit-down rider electric forklift to replace an existing diesel-powered ICE forklift with a lift capacity of 6,000 pounds or more. The forklift owner has decided to purchase a new electric forklift instead of purchasing a new diesel forklift certified to a 6.9 g/bhp-hr NOX standard. The cost of the new electric forklift is \$39,900, plus \$4,000 for the battery, whereas the cost to buy a new diesel ICE forklift is \$35,730. The new forklift will operate 1,900 hours annually and will operate 100 percent of the time in the South Coast Air Basin.

#### Emission Reduction Calculation

<b>Baseline NOx Emissions (from Table 6.6):</b>	6.9 g/bhp-hr
<b>Reduced NOx Emissions (0 for electric):</b>	0 g/bhp-hr
<b>Rated Horsepower (from manufacturer):</b>	90 hp
<b>Lift Capacity (from manufacturer):</b>	over 6,000 lbs
<b>Annual Operating Hours (actual or default from Table 6.7):</b>	1,900 hours
<b>Load Factor (actual or default from Table 6.7):</b>	0.30
<b>Project Life (from Table 6.10):</b>	5 years
<b>Percent Operated in SCAB:</b>	100%
<b>(ton/907,200 g):</b>	Converts grams to tons

#### Baseline Engine

$$6.9 \text{ g/bhp-hr} * 90 \text{ hp} * 1,900 \text{ hours/year} * 0.30 * 100\% * \text{ton/907,200g} = 0.39 \text{ tons/year}$$

#### Reduced Engine

$$0 \text{ g/bhp-hr} * 90 \text{ hp} * 1,900 \text{ hours/year} * 0.30 * 100\% * \text{ton/907,200g} = 0.0 \text{ tons/year}$$



0.39 tons/year – 0.0 tons/year = **0.39 tons/year NOx reduced**

### Cost and Cost-Effectiveness Calculations

The annualized cost is based on the portion of incremental project costs funded by the Moyer Program, the expected life of the project (5 years at a minimum), and the capital recovery factor used to amortize the project cost over the project life. The incremental capital cost to the equipment owner for this purchase and the maximum amount that could be funded through the Moyer Program fund are determined as follows:

**Total cost of new electric forklift (w/ battery):** = \$ 39,900 + \$ 4,000 = \$ 43,900  
**Incremental Capital Cost:** = \$ 43,900 - \$ 35,730 = \$ 8,170  
**Max. Amount Funded:** = \$ 8,170  
**Capital Recovery Factor (from Table 6.8):** = 0.218  
**Annualized cost:** = \$ 8,170 \* 0.218 = \$ 1,784/year  
**Cost-Effectiveness:** = (\$ 1, 784/year)/(0.39 tons/year) = **\$ 4,574/ton**  
**Cost-Effectiveness Limit (from Table 6.9):** = **\$13,600/ton**

The project meets the cost-effectiveness limit of \$13,600 per ton NOx reduced for forklifts over 6,000 lbs. lift capacity and is eligible for an incentive amount of \$8,170.

### **Example 2 – Replacement of a Propane Forklift**

A forklift owner applies for a Moyer Program grant for the purchase of a new counter balanced sit down rider electric forklift to replace a propane powered ICE forklift. The forklift owner has decided to purchase a new electric forklift instead of purchasing a new 42 hp propane forklift. The cost of the new electric forklift is \$30,000 (including one battery pack), whereas the cost to buy a new propane forklift is \$25,000. The new forklift will operate 1,900 hours annually and will operate 100 percent of the time in the South Coast Air Basin.

### Emission Reduction Calculation

<b>Baseline NOx Emissions (from Table 6.6):</b>	9.0 g/bhp-hr
<b>Reduced NOx Emissions (0 for electric forklift):</b>	0 g/bhp-hr
<b>Rated Horsepower (from manufacturer):</b>	42 hp
<b>Lift Capacity (from manufacturer)</b>	3,000 lbs
<b>Annual Operating Hours (Actual or default from Table 6.7):</b>	1,900 hours
<b>Load Factor (Actual or default from Table 6.7):</b>	0.30
<b>Project Life (from Table 6.10)</b>	5 years
<b>Percent Operated in SCAB:</b>	100 percent
<b>(ton/907,200 g):</b>	Converts grams to tons

### Baseline Engine

9.0 g/bhp-hr \* 42 hp \* 1,900 hrs/yr \* 0.30 \* 100 percent \* ton/907,200g = 0.24 tons/year

### Reduced Engine

$0 \text{ g/bhp-hr} * .42 \text{ hp} * 1,900 \text{ hrs/yr} * 0.30 * 100 \text{ percent} * \text{ton}/907,200\text{g} = 0.0 \text{ tons/year}$

$0.24 \text{ tons/year} - 0.0 \text{ tons/year} = \mathbf{0.24 \text{ tons/year NOx reduced}}$

### Cost and Cost-Effectiveness Calculations

The annualized cost is based on the portion of incremental project costs funded by the Moyer Program, the expected life of the project (5 years at a minimum), and the capitol recovery factor used to amortize the project cost over the project life. The incremental capital cost to the equipment owner for this purchase and the maximum amount that could be funded through the Moyer Program fund are determined as follows:

<b>Total cost of new electric forklift</b>	= \$ 22,000
<b>Incremental Capital Cost</b>	= \$ 22,000 - \$ 16,000=6,000
<b>Max. Amount Funded</b>	= \$ 6,000
<b>Capital Recovery Factor (from Table 6.8):</b>	= 0.218
<b>Annualized cost</b>	= \$ 6,000 * 0.218 = \$ 1,308/year
<b>Cost-Effectiveness</b>	= (\$ 1,308/year)/(0.24 tons/year) = <b>\$ 5,450/ton</b>
<b>Cost-Effectiveness Limit (from Table 6.9):</b>	= <b>\$3,100/ton</b>

IMPORTANT: The cost-effectiveness for the example is greater than the \$3,100 per ton cost-effectiveness maximum. In order to meet the \$3,100 per ton cost-effectiveness requirement, the funding request should be reduced. To determine the maximum funding request amount allowed by the cost-effectiveness limit, multiply the cost-effectiveness limit (\$3,100) by the NOx emissions reduction in tons/year and divide by the Capital Recovery Factor:

$$(\$3,100 * 0.24) / 0.218 = \$3,413$$

Thus, this project would only qualify for a portion of the full incremental cost – a maximum amount of \$3,413 per forklift.

### **Example 3 – Retrofit of a Propane Forklift**

A forklift owner applies for a Moyer Program grant to retrofit a 1998 propane powered ICE forklift. The existing propane forklift has uncontrolled NOx emissions of 10.5 g/bhp-hr. The cost of the retrofit is \$5,000. The existing forklift will operate 1,900 hours annually for five years and will operate 100 percent of the time in the South Coast Air Basin.

### Emission Reduction Calculation

<b>Baseline NOx Emissions (from Table 6.6):</b>	10.5 g/bhp-hr
<b>Reduced NOx and NMHC Emissions (based on certification data from CARB test of catalytic control device) :</b>	3.0 g/bhp-hr
<b>Reduced NOx, with NMHC factored out (3.0 *0.8)</b>	2.4 g/bhp-hr (See discussion below.)

<b>Rated Horsepower (from manufacturer):</b>	60 hp
<b>Annual Operating Hours (actual or default from Table 6.7):</b>	1,900 hours
<b>Load Factor (actual or default from Table 6.7):</b>	0.30
<b>Project Life (from Table 6.10)</b>	5 years
<b>percent Operated in SCAB:</b>	100 percent
<b>(ton/907,200 g):</b>	Converts grams to tons

#### Baseline Engine

$$10.5 \text{ g/bhp-hr} * 60 \text{ hp} * 1,900 \text{ hrs/yr} * 0.30 * 100 \text{ percent} * \text{ton}/907,200\text{g} = 0.40 \text{ tons/year}$$

#### Reduced Engine

$$2.4 \text{ g/bhp-hr} * 60 \text{ hp} * 1,900 \text{ hrs/yr} * 0.30 * 100 \text{ percent} * \text{ton}/907,200\text{g} = 0.09 \text{ tons/year}$$

$$0.40 \text{ tons/year} - 0.09 \text{ tons/year} = \mathbf{0.31 \text{ tons/year NOx reduced}}$$

Special Note: As mentioned in the first paragraph of the Emission Reduction Calculation Discussion section, it is necessary to apply a factor to the combined NOx+NMHC emission standard to obtain the NOx-only portion of the emissions. For diesel engine, this fraction is 0.95 and for alternative fuel engines, including propane, the fraction is 0.80.

#### Cost and Cost-Effectiveness Calculations

The annualized cost is based on the portion of incremental project costs funded by the Moyer Program, the expected life of the project (5 years at a minimum), and the capitol recovery factor used to amortize the project cost over the project life. The incremental capital cost to the equipment owner for this purchase and the maximum amount that could be funded through the Moyer Program fund are determined as follows:

<b>Total cost of retrofit</b>	= \$ 5,000
<b>Incremental Capital Cost</b>	= \$ 5,000
<b>Max. Amount Funded</b>	= \$ 5,000
<b>Capital Recovery (from Table 6.8)</b>	= 0.218
<b>Annualized cost</b>	= \$ 5,000 * 0.218 = \$ 1,090/year
<b>Cost-Effectiveness</b>	= (\$ 1,090/year)/(0.31 tons/year) = <b>\$ 3516/ton</b>
<b>Cost-Effectiveness Limit (from Table 6.9):</b>	= <b>\$13,600/ton</b>

The project meets the cost-effectiveness limit of \$13,600 per ton NOx reduced and is eligible for an incentive amount of \$5,000.

<p align="center"><b>Carl Moyer Memorial Air Standards Attainment Program FORKLIFT PROJECT APPLICATION</b></p>
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Please provide all information requested regarding your proposed project. Additional information may be requested during the review process. Applicant acknowledges that funding award is subject to AQMD approval and must meet the minimum eligibility criteria within the project category.

**Please print or type:**

**A. APPLICANT INFORMATION: Please Type or Print ALL information.**

Organization/Company Name:		
Business Type:		
Project Name:		
Street/mailling address:		
City:	State:	Zip Code:
Contact name:		
Phone: (     )	Fax: (     )	
E-mail:		
Person with contract signing authority (if different):		
Name:	Phone:	
Geographic area served by organization:		
Geographic area to be served by equipment (if different than above):		

I hereby certify that all information provided in this application/attachments is true and correct.

Number and Type of Vehicles/Equipment Requested for Funding (New Electric Forklift):	Total Funding Request:
Number and Type of Vehicles/Equipment Requested for Funding (ICE Retrofit):	Total Funding Request:
Printed Name of Responsible Party:	Title:
Signature of Responsible Party:	Date:

### **CHECK LIST FOR APPLICATION ITEMS**

**Be sure the following items are included with your application submittal. Check each applicable box below to indicate inclusion of material.**

- ☐ Completed Application (All Sections)
- ☐ Checklist for Application Items and Eligibility Criteria
- ☐ Vendor quotes or other documentation substantiating cost data provided in Application.
- ☐ Contracting Statements
  - ☐ Statement of Understanding for Work Statement and Deliverables
  - ☐ Conflict of Interest Statement (as described in the RFP)
  - ☐ Third-Party Application Submittal Authorization (Only required if application is submitted by someone other than the vehicle/equipment owner.)
  - ☐ Checklist for Eligibility Criteria
- ☐ Co-funding information attachments (if applicable)
- ☐ Certifications and Representations
- ☐ Other (attach explanation)

If you have any questions regarding the application process, please contact:

Connie Day  
(909) 396-3055/3252 fax  
Science & Technology Advancement  
South Coast Air Quality Management District  
21865 East Copley Drive, Diamond Bar, CA 91765

### **REMINDER**

**Due Date** - The proposer shall submit **six (6) complete copies of the proposal** in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the proposer and the words "Request for Proposals #P2004-04." All proposals are due no later than 5:00 p.m., on Friday, October 10, 2003. Postmarks are not accepted. **Faxed or e-mailed proposals will not be accepted.** Proposals must be directed to:

Procurement Unit  
South Coast Air Quality Management District  
21865 East Copley Drive  
Diamond Bar, CA 91765

## **CONTRACTING STATEMENTS (ALL ARE REQUIRED)**

### **1. Statement of Understanding for Work Statement and Deliverables**

In order to minimize the effort required to complete a Moyer Program Application, AQMD does not require submittal of a Work Statement or Deliverables Summary with the Application. However, the undersigned confirms full understanding that, if awarded funding under the Carl Moyer Program, development and submittal of the detailed work statement, with deliverables and schedule, is a requirement of the contracting process. Recommended projects will not receive funding without these documents. Full details of the Work Statement and Deliverables requirements are detailed in RFP #P2004-04. In addition, Baseline and reduced-emission vehicle Serial/VIN information must be provided at contract start. By signing below, the applicant acknowledges these requirements.

### **2. Conflict of Interest Statement**

Please address any potential conflicts of interest with other clients affected by actions performed by the firm on behalf of the AQMD in the form of a Conflict of Interest Statement. Although the proposer will not be automatically disqualified by reason of work performed for such firms, the AQMD reserves the right to consider the nature and extent of such work in evaluating the proposal. Conflicts of interest will be screened on a case-by-case basis by the AQMD District Counsel's Office. Conflict of interest provisions of the state law, including the Political Reform Act, may apply to work performed pursuant to this contract. Please provide a Conflict of Interest Statement below. If additional room is necessary, please attach extra pages to this sheet.

### **3. Third-Party Application (Circle One:   Applicable   Not Applicable)**

Applicants who are submitting on behalf of a vehicle/equipment owner must provide authorization from the vehicle/equipment owner to act on their behalf for this application process. This authorization shall be provided in the form of a "Letter of Exclusive Authorization", to be attached to this sheet. In addition, the vehicle/equipment owner shall enter into a contract with its authorized applicant, who will sign a contract with AQMD for fulfilling all contract obligations.

4. Applicant certifies that electric forklift is replacing an ICE forklift, or is an additional new forklift that increases the percentage of electric forklifts in Applicant's forklift fleet.

Organization:	
Printed Name of Responsible Party:	Title:
Signature of Responsible Party:	Date:

## CHECK LIST FOR ELIGIBILITY CRITERIA

Please check each applicable box to indicate eligibility of proposed forklift technology.

- ☐ The proposed new equipment is an electric forklift:
- ☐ Rated class 1 (lift code 5) four wheel sit-down counterbalanced model, cushion tire **or**
  - ☐ Rated class 1 (lift code 6) four wheel sit-down counterbalanced model **or**
  - ☐ An existing Large Spark Ignition (LSI) forklift (less than 8,000 lbs. lift capacity) **or**
  - ☐ A new Large Spark Ignition forklift (over 8,000 lbs. lift capacity)
- ☐ The new electric forklift is:
- ☐ Replacing an older non-electric forklift in existing business/fleet **or**
  - ☐ Part of business/fleet expansion that will increase the percentage of electric forklifts in the fleet **or**
  - ☐ For new facility or business.
- ☐ The new forklift is not being used in the retail food, cold storage or within a confined indoor space.
- ☐ The LSI forklift is being retrofit with a catalytic muffler-type control device that has been certified by CARB
- ☐ The electric forklift is rated:
- ☐ 3,000 to 5,999 pound lift capacity (replacement in existing fleet or addition due to expansion of facility)
  - ☐ 6,000 pound or greater lift capacity (for existing business/fleet).
- ☐ A battery charging unit will be purchased for each new electric forklift (includes fast charger for multiple forklifts).
- ☐ The forklift is purchased or leased-to-own by the user (3,000 to 5999 lb only), not rented or leased..
- ☐ The purchase and/or amount of emission reduction is not required by any local, state, or federal rule or regulation, MOU or MOA, or used to comply with any such rule, regulation, or agreement including new CARB forklift control measures.
- ☐ Seventy-five percent or more of the equipment fuel consumption or hours of operation will be within the South Coast Air Basin, for at least (5) years from the date the equipment is placed into service .
- ☐ The existing LSI forklift being retrofit has at least 5 years remaining useful life.

Organization:	
Printed Name of Responsible Party:	Title:
Signature of Responsible Party:	Date:

## **FORKLIFT APPLICATION**

### **B. GENERAL EQUIPMENT INFORMATION (ALL APPLICANTS)**

<b>EXISTING FLEET INFORMATION</b> (Please fill out if you are replacing a non-electric forklift in your current fleet/business or if this proposed purchase is for fleet/business expansion. If you are replacing more than one type of forklift, please complete a separate application for each type. If you are a new facility/business, please continue to Section B).
1. Number of forklifts in applicant's existing fleet:
2. Number of non-electric forklifts in the applicant's current fleet:
3. Business or industry of applicant:
5. Routine work application of current forklift fleet:
6. Is the current forklift fleet generally used inside or outside?
7. Number of forklifts in existing fleet that are currently used outdoors on rough terrain, or inclines greater than 10 percent?
8. Does the applicant currently own forklift charging equipment?

### **C. NEW EQUIPMENT INFORMATION (ELECTRIC FORKLIFT ONLY; RETROFIT APPLICANTS, PLEASE CONTINUE TO SECTION I)**

<b>NEW EQUIPMENT PURCHASED OR CONSIDERED FOR PURCHASE.</b> If you are replacing more than one type of forklift, please do a separate application for each type.
9. Number of electric forklifts, rated Class 1 (lift code 5 or 6) purchased or considered for purchase?
10. Do you intend to purchase more than one battery pack for each forklift? If yes, please indicate justification for additional battery packs.
11. Number of chargers purchased or considered for purchase?
12. Will the new forklifts be used primarily inside or outside?
13. Primary function or work application of proposed new equipment:
14. Estimated total annual hours of operation per forklift:



## FORKLIFT APPLICATION

<b>D. NEW ELECTRIC FORKLIFT EQUIPMENT TO BE PURCHASED (Electric Forklift Only)</b> (All applicants please fill out a separate application for each type of forklift purchased or considered for purchase)	
16. Equipment make:	
17. Equipment model:	
18. Equipment model year:	
19. Lift capacity (pounds) for each forklift:	
20. What is the forklift class and lift code rating?	
21. What kind of tires does the forklift have (air-filled, cushion, other)?	
22a. Estimated replacement schedule:	22b. Project Life (provide an absolute number of years, not a range)
23. Cost of new electric forklift (do not include battery pack):	
24. Cost of one battery pack:	
25. Funding Request for additional battery pack (for multiple shift operations only):	

<b>E. MANUFACTURER OR DEALER INFORMATION FOR NEW ELECTRIC FORKLIFT (Electric Forklift Only)</b>	
Manufacturer/Dealer:	
Street Address:	
City:	State:
Phone: (     )	Fax: (     )
Contact Name:	

## FORKLIFT APPLICATION

<b>F. INFORMATION ABOUT EXISTING FORKLIFT BEING REPLACED (Fill out if you are replacing a non-electric forklift in your existing fleet. If you are expanding your current fleet/business or are a new facility/business, go to H):</b>	
26. Forklift manufacturer:	
27. Forklift model & serial number:	
28. Year purchased:	
29. Year manufactured:	
30. Manufacturer's Maximum Rated Brake Horsepower Rating:	
31. Lift capacity (pounds) for each forklift:	
32. Estimated annual fuel consumption (include units):	33. Estimated total annual hours of operation:
34. How many years do you typically use your forklifts?	
36. Primary Fuel: <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Gasoline	
37. Primary function (work application) of existing forklift:	
38. Briefly describe what you intend to do with this forklift after you have purchased the new electric forklift:	

## FORKLIFT APPLICATION

<b>G. INFORMATION ON THE NON-ELECTRIC FORKLIFT THAT YOU WOULD HAVE PURCHASED IF YOU DID NOT RECEIVE FUNDING FROM THE CARL MOYER PROGRAM</b>		
39. Forklift manufacturer:		
40. Forklift model:	41. Lift Capacity for each forklift (in pounds):	42. Year manufactured:
43. Manufacturer's Maximum Rated Brake Horsepower Rating:	44. Cost if purchased new (attach quote):	
45. Estimated annual fuel consumption (include units):	46. Estimated total annual hours of operation:	
47. Primary Fuel: <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Gasoline		
48. Name and Phone Number of Store or Dealer that provided quote:		

<b>H. INFORMATION ABOUT NEW FACILITIES, FACILITIES EXPANSION OR NEW LOCATION FOR MULTI-SITE BUSINESS</b>
49. Is this a new facility?
50. Does the company have multiple locations?
51. What is the current percentage of electric forklifts at all existing facilities?
52. What will the percentage of electric forklifts for all facilities be after proposed purchase?
53. What percentage is the facility expanding?
54. What is the existing percentage of electric forklifts?
55. What will be the percentage of electric forklifts after the proposed purchase?

## FORKLIFT APPLICATION

### I. FORKLIFT RETROFIT

Catalytic control device manufacturer:	
Retrofit Installer Company Name:	
Installer street address:	
City:	State:
Phone: (     )	Fax: (     )
Contact name:	Retrofit kit number:
CARB Certification or Evaluation Status:	
Description of retrofit technology:	

### J. OTHER INFORMATION (Retrofit)

**All applicants must complete this section.**

<b>MAINTENANCE</b>
Describe your maintenance facility and practices, including any training regarding the low-emission technology. If the training has not been completed, provide a timeline for completion.

<b>REFUELING (for alternative fuels)</b>
Describe how and where the forklift will be refueled (alternative fuel) or charged (electric). For example, will electric forklifts be charged overnight, or will battery changeouts be done for multiple shift operations?

<b>CO-FUNDING</b>
Describe your funding sources for this project. At a minimum, this will include your company or agency's own budget for this project. For example, you could show the amount of funding you budgeted for the non-Moyer portion of the equipment.

